Annals of the Royal College of Surgeons of England (1986) *vol.* 68

Mortality in patients with obstructing colorectal cancer

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Key words: COLORECTAL CARCINOMA, MORTALITY

Summary

Of 1,033 patients with colorectal carcinoma, 238 (23%) presented with obstruction. The majority of tumours (74%) were potentially curable (Dukes B/C) at presentation. Tumours situated at the splenic flexure, transverse or descending colon were most likely to obstruct. Perioperative mortality was high following either primary resection (31%) or fashioning of a defunctioning stoma alone (25%) but was twice as high (40%) in patients over 70 than those under 70 (20%). Cardiorespiratory complications accounted for 55% of this mortality, while fatal technical complications occurred in 19%. Sixty seven patients (28%) had two operations, 51 patients (21%) had three operations.

Introduction

Many patients with colorectal cancer present as emergencies and the commonest reason is obstruction of the bowel (*1,2*). Previous reports have shown that there is a reduced five year survival rate for patients who present with obstructing as opposed to non-obstructing cancers. This worse prognosis is primarily related to an increased perioperative mortality (*3,4*).

In this study we have assessed the site of the tumour and the stage of the tumour in patients presenting with obstruction and related the perioperative mortality to the type of surgery undertaken and the age of the patient.

Patients and methods

The records of 1,033 consecutive patients seen at Dudley Road Hospital with carcinoma of the colon or rectum between 1972 and 1982 have been analysed. The pathological stage of the primary tumour was recorded according to Turnbull's modification of Dukes system, which includes Stage D for advanced incurable disease (*5,6*).

Perioperative mortality was defined as death in hospital during hospital stay. To determine whether obstruction was related to tumour site the large bowel was divided into four regions. The four sub-divisions were, caecum, ascending colon and hepatic flexure (CAH), transverse colon, splenic flexure and descending colon (TPD), sigmoid and rectosigmoid junction (SJ) and the rectum (R). The χ^2 test, with Yates correction where applicable, has been used for statistical analysis of the data.

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Results

Five hundred and twenty three patients (51%) presented as emergencies of whom 238 (23%) had obstructing carcinomas. Significantly fewer rectal tumours presented with obstruction and tumours situated in the region of the splenic flexure (TPD) carried the highest risk of obstructing. ($\chi^2=70.0$ $P<0.001$) (Table I).

Overall the majority of the patients presenting with obstruction had potentially curable disease; Dukes B/C=177, 74% of total, Dukes D=55 23% of total, Stage unknown=6, 3% of total. However the Dukes staging varied according to tumour location as shown in Table II. Of tumours situated in or distal to the sigmoid colon 81% had potentially curable (Stage B/C) disease while only 67% of colonic tumours situated proximal to the sigmoid were potentially curable at presentation ($\chi^2=5.2$ $P<0.05$).

An emergency operative procedure was necessary in 191 patients (80%) while a further 37 (16%) had surgery during the first hospital admission. Details of the operations performed at the primary procedure are shown in Table III. One hundred and thirty six patients (57% of the total) had a stoma fashioned at the first operation either alone or with a resection. Of the 95 of these patients who survived the first procedure 67 patients (28% of total) had a second operation and 51 (21%) had three operations.

TABLE I *Site of tumours in 1033 patients*

Site in bowel	*All patients*	*Patients with obstruction*
CAH	234	59 (26%)
TPD	139	56 (41%)
SJ	303	90 (30%)
R	357	33 (9%)

TABLE II *Staging in obstructed patients*

Site	*B/C*	*D*	*Unknown*
CAH	40 (68%)	19 (32%)	—
TPD	37 (67%)	17 (30%)	2 (3%)
SJ	76 (85%)	12 (13%)	2 (2%)
R	24 (73%)	7 (21%)	2 (6%)

TABLE III *First operative procedure*

	CAH n=59	*TPD n=56*	*SJ n=90*	*R n=33*
Resection+ anastomosis only	33 (57%)	14 (25%)	9 (10%)	5 (15%)
Resection+ anastomosis+ proximal stoma	—	14 (25%)	14 (16%)	1 (3%)
Hartmann's resection	—	—	14 (16%)	4 (12%)
Stoma alone	2 (3%)	20 (36%)	48 (53%)	19 (58%)
Bypass	17 (28%)	4 (7%)	—	—
Biopsy only	4 (7%)	1 (2%)	4 (4%)	1 (3%)
Unfit for operation	3 (5%)	3 (5%)	1 (1%)	3 (9%)

TABLE IV *Perioperative mortality from first operation*

	CAH	*TDP*	*SJ*	*R*
Resection+ anastomosis	11 (32%)	5 (36%)	2 (21%)	1 (20%)
Resection+ anastomosis+ proximal stoma	—	5 (36%)	5 (36%)	—
Hartmann's resection	—	—	8 (57%)	1 (25%)
Stoma alone	—	2 (9%)	16 (32%)	4 (20%)
Bypass	7 (41%)	1 (25%)	—	—
Biopsy	4 (100%)	1 (100%)	1 (25%)	1 (100%)

TABLE V *Causes of perioperative mortality from first operation*

	Cardio-respiratory	*Malignancy*	*Anastomotic leak*	*Stomal necrosis*
Resection+ anastomosis	10	2	7	—
Resection+ anastomosis+ proximal stoma	5	—	5	—
Hartmann's resection	9	—	—	—
Stoma alone	13	7	—	2
Bypass	4	4	—	—
Biopsy	—	7	—	—

Overall in-hospital mortality from the first operative procedure was 33%; resection and anastomosis 31%, resection and anastomosis and proximal stoma 34%, Hartmann's 50%, stoma alone 24%, bypass 38%, biopsy only 70%. Perioperative mortality related to tumour location and the operative procedure performed is shown in Table IV. A further 17 patients died after a second or third procedure (14% in-hospital mortality). Of the seventy five patients who died during hospital stay following their first operation for obstruction 54 were from the 135 patients aged over 70 years and 21 patients were from the 103 aged under 70. This represents a significantly higher death rate in the older age group ($\chi^2=9.5$ $P<0.01$). Cardiorespiratory complications were responsible for mortality in 41 patients (55%), extensive malignancy was the cause of death in 20 patients (26%) and technical failures were responsible in 14 patients (19%) including 5 patients in whom a stoma had been created proximal to the anastomosis (Table V).

Discussion

Of patients who present with colorectal cancer the percentage complicated by intestinal obstruction varies between 8% and 29% (*7*). In the present series from a district general hospital it was 23%. Overall the highest number of obstructing tumours were in the sigmoid and rectosigmoid region, but the greatest incidence of obstruction was in tumours sited in the region of the splenic flexure as reported by others (*7,8*). Tumours sited in this region are however less common overall, only 13% of the total in this series.

The high mortality of 33% from the first operation is similar to that found by other investigators. Umpleby and Williamson (*9*) found that in 103 patients presenting with obstructing colorectal carcinomas the perioperative mortality rate was 31%, while Raftery and Samson (*10*) reported a similar mortality in 101 patients. There was a perioperative mortality rate of 32% following right colonic resection in this series somewhat higher than that reported by Fielding and his colleagues (*11*) of 19% for emergency right hemicolectomy. The mortality from bypass alone however was even higher (41%). Unfortunately almost a third of the CAH patients had disseminated disease at the time of operation and in others the local disease had also spread beyond the bowel into surrounding tissues. Staging in the right sided lesions was significantly worse than for lesions in the sigmoid and rectum.

Survival from the first operation was not significantly better in patients who only had a stoma alone created, with a 25% overall mortality similar to previous reports (*12,13*). Of these deaths 90% were due to cardiorespiratory problems or advanced malignancy and probably these patients were identified as a high risk group hence the performance of a lesser procedure. Of the 29 patients who had a stoma created proximal to an anastomosis 5 died from leakage (17%) despite the attempt to defunction the distal bowel, so reaffirming that a protective colostomy will not necessarily prevent anastomotic dehiscence, nor protect the patient from its consequences.

Perioperative mortality was twice as high (40%) in patients aged over 70 years compared with younger patients (20%) following either resection or creation of a defunctioning stoma alone. We have reported elsewhere (*14*) that emergency procedures from colorectal cancer in the elderly are tolerated poorly compared with elective operations. The additional burden imposed by the complication produces a large increase in the mortality rate. The general condition of the patient and the extent of the malignant process were the major factors producing the high mortality in this series and also in determining the surgeon's choice of operative procedure. However when a primary left or right sided resection with anastomosis was performed, with or without a protective stoma, almost half the deaths were due to anastomotic dehiscence. The leakage rate from colonic anastomoses varies greatly (0–35%) between surgeons (*15*) and in this series 12 of 90 patients (13%) who had a primary resection with or without a proximal stoma died from anastomotic dehiscence. Awareness among surgeons of the rate of anastomotic leakage can produce a reduction of technical failures (*15*). In our series leakage was as common with right sided resections as with those on the left side of the colon.

It is disappointing that Hartmann's operation had such a high mortality in this series. However the number of Hartmann's procedures was small and it would be unwise to abandon it because of these results. Recent reports have stressed the usefulness of Hartmann's operation for emergency colorectal procedures (*16,17*). It may be however that, for obstructing rather than perforating lesions, its use should be restricted to fit patients and that a double barrelled sigmoid colostomy should be performed in the frail.

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Notes on books

Presentation of Data in Science by Linda Reynolds and Doig Simmonds. 209 pages, illustrated. Martinus Nijhoff, Dordrecht. £22.95.

Attend any surgical meeting and you will still see examples of dreadful slides and less than adequate posters. This book tells how data *should* be presented and covers publications, overhead projection, tape slides and television as well as slides and posters. Beginning with a chapter on the legibility of type it goes on to discuss principles of typography and layout and gives many practical hints. It should be required reading for all who wish to write a paper or give a lecture.

Primary Chemotherapy in Cancer Medicine edited by D J Theo Wagener, Geert H Blijham, Jan B E Smeets and Jacques A Wils. 404 pages. Alan R Liss, New York. £49.

Primary chemotherapy is a method of treatment which refers to the giving of chemotherapy before surgery or radiotherapy. Although still controversial this technique promises to become an important new method for improving the prognosis of advanced cancers. This volume, which comprises the Proceedings of an International Symposium held in the Netherlands in 1985, gives the results of primary chemotherapy in many different tumours and will be of interest to all who manage patients with carcinoma.

Colon, Rectal and Anal Surgery. Current Techniques and Controversies edited by I J Kodner, R D Fry and J P Roe. 350 pages, illustrated. C V Mosby, St. Louis. £76.

Many readers of this notice will find this volume of interest. The first section is on benign anorectal disease, covering such subjects as haemorrhoids, fissures, fistulas and incontinence. Section two covers colorectal bleeding and diverticulitis while section three discusses the surgical treatment of familial polyposis coli. The next section covers malignant disease and the last section inflammatory bowel disease. The illustrations are a combination of high quality photographs and clear line diagrams, while the large page size allows for an uncluttered layout. Recommended.

A Surgical Catechism by Leonard Cotton. 54 pages, illustrated, paperback. Hodder and Stoughton, London. £2.25.

A slender text for the white coat pocket of medical students. It lays out a simple system of history-taking and physical examination covering each important area of the body in turn. All surgical teachers should be aware of this book and recommend it to their students.

Colorectal Cancer: Current Concepts in Diagnosis and Treatment edited by Glenn Steele Jr. and Robert T Osteen. 366 pages, illustrated. Marcel Dekker, New York. $71.25.

Colorectal cancer is one of the commonest causes of death from malignant disease in the western world. It is timely that this book should appear to give a statement of current concepts in diagnosis and treatment. Screening, prognostic factors, radiation therapy, chemotherapy and treatment of metastases are some of the topics discussed in this detailed study It is not designed for the casual reader looking for an overview but presents both supporting and opposing data on controversial points and the data presented has been scrupulously examined from the standpoints of quality, veracity, plausibility of interpretation and implications. An important volume in its field.

Stoma Therapy. An Atlas and Guide for Intestinal Stomas by Rainer Winkler. 108 pages, illustrated. Georg Thieme Verlag, Stuttgart. DM 98.

All you need to know about stomas in a slim, colour illustrated volume well referenced and handsomely produced. There is an extensive section on stoma complications which includes a number of grotesque photographs emphasising the importance of getting the stoma right first time. This volume should be on the shelves of every stoma therapy department in the country.

Ultrasound in Urology edited by Saad Khoury. 405 pages, illustrated, paperback. Brüel and Kjaer, Harrow. £10.

Translated from the French, this atlas gives illustrations of various ultrasound appearances in the field of urology. On each page there is an ultrasound scan beside which is a line diagram explaining the appearances. Beneath the two illustrations is a short relevant text.

Manual of Medical Care of the Surgical Patient edited by Solomon Papper and G Rainey Williams. 2nd Edition, 256 pages, paperback. Little, Brown, Boston. £17.10.

A highly concentrated text describing the detection, evaluation and management of medical conditions which may occur in surgical patients. In this second edition there has been new information added especially in the areas of nutrition, cardiac surgery and blood transfusion. Small enough for the white coat pocket it will be of particular benefit for housemen and registrars.